Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) : A method of fourth-order, blind identification of two sources in a system including a number of sources P and a number N of reception sensors receiving [[the]] observations, the sources having different tri-spectra, comprising the following steps:

a) fourth-order whitening of the observations received on the reception sensors in order to orthonormalize the direction vectors of the sources in [[the]] matrices of quadricovariance of the observations used,

b) joint diagonalizing of several whitened matrices of quadricovariance to identify the spatial signatures of the sources.

2. (currently amended): The method according to claim 1, wherein the observations used correspond to [[the]] time-domain averaged matrices of quadricovariance defined by:

$$Q_x(\tau_1,\tau_2,\tau_3) = \sum_{p=1}^{P} c_p(\tau_1,\tau_2,\tau_3)\,(\boldsymbol{a}_p\otimes \boldsymbol{a}_p^{\,*})\,(\boldsymbol{a}_p \otimes \boldsymbol{a}_p^{\,*})^{\mathrm{H}} \tag{4a}$$

$$= A_Q\ C_s(\tau_1,\tau_2,\tau_3)\ A_Q^{\ \mathrm{H}} \tag{4b}$$

where A_Q is a matrix with a dimension $(N^2 \mathrm{x}\ P)$ defined by $A_Q = [(\boldsymbol{a}_1\otimes\boldsymbol{a}_1^*), \ldots., (\boldsymbol{a}_p\otimes\boldsymbol{a}_p^*)]$, $C_s(\tau_1,\tau_2,\tau_3)$ is a diagonal matrix with a dimension $(P \ \mathrm{x}\ P)$ defined by $C_s(\tau_1,\tau_2,\tau_3) = \mathrm{diag}[c_1(\tau_1,\tau_2,\tau_3),\ldots, c_p(\tau_1,\tau_2,\tau_3)]$ and $c_p(\tau_1,\tau_2,\tau_3)$ is defined by:

$$c_p(\tau_1,\tau_2,\tau_3) = \langle \mathrm{Cum}(s_p(t), s_p(t-\tau_1)^*, s_p(t-\tau_2)^*, s_p(t-\tau_3))\rangle \tag{5}$$

3. (previously presented): The method according to claim 2, comprising the following steps:

Step 1: estimating, through $Q;\hat{}_x$, of the matrix Q_x, from the L observations $x(lT_e)$ using a non-skewed and asymptotically consistent estimator.

Step 2: eigen-element decomposition of $Q;\hat{}_x$, the estimation of the number of sources P and the

limiting of the eigen-element decomposition to the P main components:

$Q;^{\wedge}{}_{x} \approx E;^{\wedge}{}_{x}\ \Lambda;^{\wedge}{}_{x}\ E;^{\wedge}{}_{x}{}^{H}$, where $\Lambda;^{\wedge}{}_{x}$ is the diagonal matrix containing the P eigenvalues with the highest modulus and $E;^{\wedge}{}_{x}$ is the matrix containing the associated eigenvectors.

Step 3: building of the whitening matrix: $T;^{\wedge} = (\Lambda;^{\wedge}{}_{x})^{-1/2}\ E;^{\wedge}{}_{x}{}^{H}$.

Step 4: selecting K triplets of delays $(\tau_1{}^k, \tau_2{}^k, \tau_3{}^k)$ where $|\tau_1{}^k| + |\tau_2{}^k| + |\tau_3{}^k| \neq 0$.

Step 5: estimating , through $Q;^{\wedge}{}_{x}(\tau_1{}^k, \tau_2{}^k, \tau_3{}^k)$, of the K matrices $Q_x(\tau_1{}^k, \tau_2{}^k, \tau_3{}^k)$.

Step 6: computing of the matrices $T;^{\wedge}\ \ Q;^{\wedge}{}_{x}(\tau_1{}^k, \tau_2{}^k, \tau_3{}^k)\ \ T;^{\wedge H}$ and the estimation, by $U;^{\wedge}{}_{sol}$, of the unitary matrix U_{sol} by the joint diagonalizing of the K matrices $T;^{\wedge}\ \ Q;^{\wedge}{}_{x}(\tau_1{}^k, \tau_2{}^k, \tau_3{}^k)\ \ T;^{\wedge H}$

Step 7: computing $T;^{\wedge\ \#}U;^{\wedge}{}_{sol} = [\boldsymbol{b};^{\wedge}{}_{1} \ldots \boldsymbol{b};^{\wedge}{}_{P}]$ and the building of the matrices $B;^{\wedge}{}_{l}$ sized (N x N).

Step 8: estimating , through $\boldsymbol{a};^{\wedge}{}_{P}$, of the signatures a_q $(1 \leq q \leq P)$ of the P sources in applying a decomposition into elements on each matrix $B;^{\wedge}{}_{l}$.

4. (currently amended): The method according to claim 1, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion:

$$\mathrm{D}(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots, \alpha_P) \tag{16}$$

where

$$\alpha_p = \min_{1 \leq i \leq P} [\mathrm{d}(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)] \tag{17}$$

and where $\mathrm{d}(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$\mathrm{d}(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^{H}\boldsymbol{v}|^2}{(\boldsymbol{u}^{H}\boldsymbol{u})(\boldsymbol{v}^{H}\boldsymbol{v})} \tag{18}$$

5. (previously presented): The method according to claim 1, a fourth-order cyclical after the step a) of fourth-order whitening.

6. (previously presented): The method according to claim 5, wherein the identification step is performed in using fourth-order statistics.

7. (previously presented): The method according to claim 1 wherein the number of sources P is greater than or equal to the number of sensors.

8. (previously presented): The method according to claim 1, comprising goniometry using the identified signature of the sources.

9. (previously presented): The method according to claim 1, comprising spatial filtering after the identified signature of the sources.

10. (previously presented): The use of the method according to claim 1, for use in a communications network.

11. (currently amended): The method according to claim 2, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion

$$\mathrm{D}(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots.., \alpha_P)$$

where

$$\alpha_p = \min_{1 \leq i \leq P} [\mathrm{d}(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $\mathrm{d}(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$\mathrm{d}(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^{\mathrm{H}}\boldsymbol{v}|^2}{(\boldsymbol{u}^{\mathrm{H}}\boldsymbol{u})(\boldsymbol{v}^{\mathrm{H}}\boldsymbol{v})}$$

12. (currently amended): The method according to claim 3, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion

$$\mathrm{D}(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots.., \alpha_P)$$

where

$$\alpha_p = \min_{1 \leq i \leq P} [\mathrm{d}(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $\mathrm{d}(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$\mathrm{d}(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^{\mathrm{H}}\boldsymbol{v}|^2}{(\boldsymbol{u}^{\mathrm{H}}\boldsymbol{u})(\boldsymbol{v}^{\mathrm{H}}\boldsymbol{v})}$$

13. (previously presented): The method according to claim 2, a fourth-order cyclical after the step a) of fourth-order whitening.

14. (previously presented): The method according to claim 2, wherein the identification step is performed in using fourth-order statistics.

15. (previously presented): The method according to claim 2, wherein the number of sources P is greater than or equal to the number of sensors.

16. (previously presented): The method according to claim 2, comprising goniometry using the identified signature of the sources.

17. (previously presented): The method according to claim 3, a fourth-order cyclical after the step a) of fourth-order whitening.

18. (previously presented): The method according to claim 3, wherein the identification step is performed in using fourth-order statistics.

19. (previously presented): The method according to claim 3, wherein the number of sources P is greater than or equal to the number of sensors.

20. (previously presented): The method according to claim 3, comprising goniometry using the identified signature of the sources.